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EXAMINER

PHAN, TRI H

ART UNIT PAPER NUMBER

2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

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DETAILED ACTION

Response to Amendment/Arguments

1. This Office Action is in response to the Response/Amendment filed on December 14th, 2006. Claims 1-16, 37-38 and 45 are now canceled, claims 17-31 are withdrawn and new claim 47 is added. Claims 32-36, 39-44 and 46-47 are now pending in the application. In a response to this Office Action Applicant should cancel the non-elected claims to expedite the prosecution, should the response place the instant application in a favorable condition for allowance.

Claim Objections

2. Claims 32, 46 and 47 are objected to because of the following informalities:

Regarding claim 32, line 10, the word “each” in front of “master unit” should be changed to -- the -- for clarification.

Regarding claim 46, line 16, the word “each” in front of “master unit” should be changed to -- the -- for clarification.

Regarding claim 47, line 9, the word “each” in front of “master unit” should be changed to -- the -- for clarification.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2616

4. Claim 46 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Regarding claim 46, the recitation "*the system*" in lines 3 and 7, is vague and indefinite because it is unclear whether the limitation refers to "*distributed drive system*" or which "*communication system*", e.g. "*communication systems*", "*first communication system*" or "*additional communication system*".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 32-35, 39-40, 43-44 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tan, Yoichi** (U.S.4,502,137A; hereinafter refer as '**Tan**').

- In regard to claims 32 and 47, **Tan** discloses, *a system and method for real-time communication between a number of network subscribers in a communication system* (for example see figs. 2-3; col. 2, lines 41-44) *using Ethernet physics* (for example see col. 2, lines 4-6), *comprise*

transmitting messages via Fast-Ethernet devices to establish communication between a master unit and one or more slave units with one another (for example see figs. 2-3; col. 1, lines

Art Unit: 2616

4-16; wherein the S station or transmitting station, e.g. “*master unit*”, is communicating with other R1-4/C stations or receiving stations, e.g. “*slave units*”),

synchronizing the master unit and the one or more slave units by means of a common timebase to interchange messages (‘block and frame timing’ from key station) cyclically within a total cycle time (for example see Abstract, col. 4, lines 11-17; col. 8, lines 17-19; wherein the frame is periodically repeated on a time base as disclosed in figure 1; col. 3, lines 6-9), and

*assigning each slave unit a first timeslot within said total cycle time for transmission of a telegram and a second timeslot for reception of a telegram (for example see figure 3; where the transmission and reception blocks of stations such as R1-4 and C for transmitting and receiving packets, e.g. “*transmission/reception of telegrams*”, are the “*first and second timeslots*” within the total cycle time, e.g. ‘S block + R block’ in figure 3); and*

assigning each master unit a third timeslot within said total cycle time for transmission a telegram and a fourth timeslot for reception of a telegram (for example see figure 3; where the transmission and reception blocks of station S for transmitting and receiving packets, e.g. “*transmission/reception of telegrams*”, are the “*third and fourth timeslots*” within the total cycle time, e.g. ‘S block + R block’ in figure 3).

Though, **Tan** discloses the master/slave and Ethernet for communication methods in the ‘Background of Invention’ (for example see col. 2, lines 4-20); but does not particularly disclose about “Fast-Ethernet”; however, “Fast-Ethernet” is well known in the art for faster transmission, with data rate as 100 Mbps as compare with Ethernet with 10 Mbps. Therefore, it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to use the Fast-Ethernet for providing faster transmission into **Tan**’s communication system.

Art Unit: 2616

- In regard to claim 33, **Tan** further discloses, *each slave unit* ('R stations' in fig. 2; for example see col. 3, lines 32-35) *being timed by way of a respective counter* ('frame counter' in fig. 2) *with a preassigned total cycle time, the respective counter being set cyclically by reception of respective slave-specific synchronization information determined by the master unit* (for example see col. 3, line 52 through col. 4, line 17; wherein other stations, e.g. "slave units", coordinate their block and frame timing on the basis of the frame synchronism and block synchronism sent by the very first station, e.g. "synchronization information determined by the master unit", as specified in col. 4, lines 11-17).

- Regarding claims 34 and 35, **Tan** further discloses, *the synchronization information comprises a respective synchronization time and an associated number value assigned for each slave unit* ('frame synchronism' and 'block synchronism'; for example see col. 3, line 61 through col. 4, line 17) and *the total cycle time, the timeslots are assigned to each slave during an initialization phase* ('frame timing' and 'block timing'; for example see col. 3, lines 64-67; col. 4, lines 11-17).

- In regard to claim 39, **Tan** further discloses, *wherein current instantaneous values are stored in each slave unit at a common point of time* (for example see col. 3, lines 52-67; where the transmitting clock is calculated at the point in time as disclosed in col. 7, line 60 through col. 8, line 15).

Art Unit: 2616

- Regarding claim 40, **Tan** further discloses, *wherein each slave unit in each telegram sends a signal to the master unit and the master unit, in the absence of said signal, controlledly stops the corresponding slave unit* (for example see col. 9, lines 52-61).

- In regarding claim 43, **Tan** fails to explicitly disclose, wherein separate transmission and reception lines between two network subscribers are used simultaneously, in that all slave units will transmit only in the direction towards the master unit, and receive telegrams only from the master unit from the master direction. However, using different lines for transmitting and receiving data is well known in the art for transmission data in communication technique, such as token ring with dual ring.

Therefore, it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of different lines for transmitting and receiving data into the **Tan**'s bidirectional transmission (see col. 1, lines 21-23), with the motivation being to provide reliability and high transmitting efficiency for data transmission as with design choices.

- Regarding claim 44, **Tan** further discloses, *wherein a majority of network subscribers having a circuit part* (see station S in fig. 2) *to form network nodes* (for example see fig. 2; wherein the station S and user unit 4 or user units form the network nodes), *servicing to pass along the telegrams towards another master unit or additional slave units* (station R, station C), *wherein the network subscribers communicating with each other directly within each communication system or via a network node according to claim 32.*

Art Unit: 2616

7. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tan, Yoichi** (U.S.4,502,137A) in view of **Azarya et al.** (U.S.5,978,578; hereinafter refer as 'Azarya').

- In regard to claim 46, **Tan** discloses all the subject matter of the claimed invention as discussed in part 6 above of this office action, for the system and method to perform real time transmission of the multipoint communication system; wherein the stations R and C, e.g. "*slave units*", are synchronized with the station S or key station, e.g. "*master unit*", by using the frame and block synchronization of the station S to synchronize and set/reset its frame counter to the exact point in time of their own reception with propagation delay; but fails to explicitly disclose specific system as in claimed invention for implementing with the method; wherein "*a distributed drive system with hierarchical network for real-time communication between a number of communication systems using Ethernet physics, the system comprising a first communication system including a numeric motion control as master unit and at least one regulating unit as slave unit, each regulating unit serving as master unit of an additional communication system comprising at least one power part to trigger a motor and an associated emitter system as slave units*". However, such implementation is known in the art.

For example, **Azarya** discloses, a distributed drive system ('control automation system') with hierarchical network (for example see Abstract; figure 3) for real-time communication between a number of communication systems using Ethernet physics (for example see col. 17, lines 42-62), the system comprises a first communication system ('plant manager 15' in figure 3) including a numeric motion control as master unit ('personal computer 14' in figure 3; wherein

Art Unit: 2616

the personal computer, e.g. “master unit”, executes and controls the external openbus node controllers, e.g. “slave units”, of the factory floors) and at least one regulating unit as slave unit (‘open node controller 10’ in figure 3), each regulating unit serving as master unit of an additional communication system (for example see figure 3; col. 9, lines 59-65; wherein the openbus node controller of the factory floor, e.g. “master unit of an additional communication system”, receives the real-time control information for monitoring and controlling the sensors, motors, I/O devices, etc., e.g. “slave units”, on the factory floor) comprising at least one power part to trigger (‘event triggers and actions’; for example see col. 18, line 57 through col. 19, line 26) a motor and an associated emitter system as slave units (‘sensors and I/O devices’ in figure 3).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the teaching of **Tan** and **Azarya**, by implement the real time transmission technique as taught by **Tan** (see **Tan**: col. 1, lines 5-7; col. 2, lines 41-44) into the automated control system as taught by **Azarya** to control/access real time information by attached hardware (see **Azarya**: col. 2, lines 53-56), for efficiency controlling and managing data among the nodes as disclosed in **Azarya**: col. 2, lines 45-60, as with system design choices.

Response to Amendment/Arguments

8. Applicant's arguments filed on December 14th, 2006 have been fully considered but they are not persuasive.

In the REMARKS, page 9, regarding claim 46, Applicant argues that there is no suggestion to combine the references. In response to applicant's argument, the examiner

Art Unit: 2616

recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, **Tan** discloses a method for performing real time transmission in time division multiplex by using frame and block synchronism for synchronizing between the sender node (node S) with others receiving nodes (R1-4) in the system. **Azarya** discloses an automated control system that enables the controller to access real-time information by attached hardware over standard communication networks.

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the teaching of **Tan** and **Azarya**, by implement the real time transmission technique as taught by **Tan** into the automated control system as taught by **Azarya**, to provide the synchronizm between nodes, e.g. sender and receivers, for efficiency managing and controlling real-time information among nodes over communication networks.

Applicant also argues that **Tan** fails to disclose a master slave communication method and an Ethernet physic of the communication system; wherein such Ethernet physic comprises, for example, line drivers (PHY) which are coupled by means of a four-wire copper cable or a two-wire fiber optics. Protocol units (Kom) are coupled with the line drivers (PHY) which process a telegram protocol (see REMARKS, page 10).

Art Unit: 2616

In fact, the applicant broadly claims the “*master/slave units*” and the “*Ethernet physics*” of the communication system, without reciting any specific structure or functionality for the “*master/slave units*” and “*Ethernet physics*” in the rejected claims, in making the contention that the **Tan** reference fails to show certain feature of applicant’s invention. Although the claims are interpreted in light of the specification, limitations from the specification or arguments are not read into the claims. In this case, since Tan only discloses ~~about~~ “master/slave and Ethernet for communication methods in the ‘Background of Invention’, the examiner broadly interprets the only sending node (node S in figs. 2-3) as “*master unit*”; while other receiving nodes (nodes R1-4 in figs. 2-3) as “*slave units*” in sending/receiving synch information; and since “*Ethernet*” is well known in the art for transmitting and receiving data with rate of 10 Mbps. Therefore, it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to use Ethernet for providing transmission data in **Tan**’s communication system.

Allowable Subject Matter

9. Claims 36, 41 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2616

Yanagisawa et al. (U.S.5,706,430) and **Kim et al.** (U.S.2002/0075890) are all cited to show devices and methods for improving the data transmission with clock synchronization in the telecommunication architectures, which are considered pertinent to the claimed invention.

Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (571) 272-3179.

Any response to this action should be mailed to:

Art Unit: 2616

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Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (571) 272-2600.

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Tri H. Phan
March 2, 2007



CHI PHAM
SUPERVISORY PATENT EXAMINER

3/2/07